

REMARKS

Claims 1-5, 8-18 and 21-24 are pending.

In order to place the case in condition for allowance or in better condition for appeal, permissive entry of amendments to claims 1, 5, 9, 14 and 18 is requested. It is also requested that claims 2-4, 6, 7, 10-13, 15, 17 and 19-24 be cancelled.

With respect to the claim rejection of claim 9 under 35 U.S.C. § 112, the claim has been amended to spell "alloy" correctly and to remove the reference to an oxide of the cited metals as an exothermic material. Because claim 9 is dependent from claim 1 and for the reasons following, claim 1 is believed to be allowable, claim 9 should be in condition for allowance.

With respect to the rejection of claims 1-5, 8, 9, 12 and 13 under 35 U.S.C. § 103(a), Applicant has considered the Examiner's position and the references cited therein and offers the following:

Claims 2-4 and 13 have been cancelled.

Claim 1 has also been amended to require a weight range of the socket of between 1,500 lbs. and 2,800 lbs. Support for the amendment is found at paragraph 4 of the specification.

The Examiner makes the statement that it would have been obvious to use the modified casting process of *Takaki* for making a termination of a wire rope of any type to be used in the designated field, such as the mining industry. However, none of the references discuss the use of wire ropes, terminations or equipment in the mining industry. Therefore, this statement of obviousness is without support.

Applicant respectfully submits that claim 1, as amended distinguishes over the prior art. The claim has been amended to require providing a multistrand steel drag line of between 4 and 7 inches in diameter (element "a") and providing a socket weighing between 1,500 lbs. and 2,800

lbs. (element "i"). Neither the *Takaki* reference nor the *Mason* reference require a wire rope of such large diameter. For example, in *Takaki* col. 4, lns. 62-64, a composite is disclosed as having an outer diameter of 7.5 millimeters. This is far smaller than the 4 to 7 inch range required by claim 1. Further, the *Mason* reference does not disclose the range of diameters of wire rope as required by claim 1. These smaller composite ropes could not be used in the mining industry in a way like that claimed by Applicant.

Further, neither of the references discloses the weight range of the connector now required by claim 1 of 1,500 to 2,800 pounds. *Takaki* discloses at col. 7, lns. 9-11 that the diameter of the connector ball is between 30 millimeters and 60 millimeters. The connector portion connected to this connector bar would be of similar small size. Claim 1 requires a weight of 1,500 to 2,800 lbs. which is far larger. Moreover, *Mason* does not disclose a weight range for its connectors.

Applicant further respectfully submits that it is improper to combine the *Takaki* reference with the *Mason* reference because the references come from non-analogous art. *Takaki* discusses forming a termination on a *composite* rope. Composite ropes have different characteristics than wire ropes and are used for very different applications. For example, at col. 1, lns. 10-20, the *Takaki* invention is to be used with marine transportation equipment or for anchoring a boat, a cable for controlling an automobile or aircraft or for a member reinforcing a concrete structure. In all of these applications, the inventor envisions using a composite rope. The composite rope is described to be very lightweight and used for prestressing concrete "*in place of a steel wire rope*". The composite ropes in the applications of *Takaki* are typically very small. At col. 4, lns. 62-64, the composite rope is described as being between 7.5 millimeters and 12.7 millimeters in diameter. Claim 1 as amended requires that the invention be used with wire ropes between 4

inches and 7 inches in diameter. Furthermore, the connectors described in *Takaki* are shown to be small, ranging between 30 and 60 millimeters at col. 7, lns. 9-12. Therefore, *Takaki* is shown to provide terminations for relatively small and lightweight applications with lightweight composite ropes. These lightweight applications would not be suitable for and could not be adapted for use in the mining industry.

Mason discloses a wire rope termination which is swaged to the wire rope around a thin uniform neck. The termination is then used in a connector with a slot which is in turn hooked to a crane for lifting loads.

Applicant submits that the two references come from non-analogous art. An inventor operating in the art of retrofitting cranes would not have thought to use the lightweight terminations of *Takaki* on composite ropes. The primary difference is the way that the different types of ropes react to loads. Typically, composite ropes under load have reduced diameters from their unloaded conditions. Wire ropes are not susceptible to this phenomenon as drastically. For that reason, an inventor facing the problem of *Mason* would not have considered the solution of *Takaki*.

Furthermore, Applicant respectfully submits that there is no motivation to combine the *Takaki* reference with *Mason* absent the benefit of Applicant's disclosure. For example, an inventor considering the problems of *Mason* would be faced with steel wires of reasonable size for use on cranes. The connectors on the wire ropes used in *Mason* must be very safe and not prone to failure. They also must be used with heavy loads with relatively low stretching and reduction in diameter. He would not be motivated to look for the *Takaki* reference because it would be in a different art and would not provide the strength or safety needed. Further, he would not be motivated to use the invention of *Takaki* if he knew about it because it is designed

for use with small diameter light composite ropes. In short, one skilled in the art would not think that terminations used on lightweight composite ropes would be strong enough or fail-safe enough to use on heavy crane equipment with wire ropes.

Furthermore, the mining industry is unique in that the loads carried by the excavation bucket are *huge*. The wire ropes used in the mining industry can be up to six inches in diameter and carry a weight of up to 1,200,000 lbs. of thrust developed in a period as short as two seconds. The prior art terminations disclosed for the lightweight ropes of *Takaki* simply would not have been considered to be substantial enough or strong enough to hold the weight and take the abuse required of a termination in the mining industry. *Takaki* only shows that the termination on the composite ropes can withstand about 11,000 lbs. ("5.8 tons"; col. 5, ln. 56). It simply would not have been obvious for an inventor faced with the problem of terminating a six-inch steel stranded rope pulling a million pounds that the lightweight terminations of *Takaki* would work or even be considered. For these reasons, Applicant respectfully and earnestly urges that the amendments after final be entered and that the claims, as amended, be allowed.

Applicant has submitted a declaration under § 132 to provide additional inducia of nonobviousness.

First, Applicant offers an explanation of why the special considerations in the mining industry of those skilled in the art would not lead them to turn to the solution of *Takaki* in the mining industry. The testimony indicates that the extreme loads and pressures involved in the mining industry make the prior art inapplicable.

Next, Applicant testifies of the skepticism of industry experts and that the results obtained by the claimed invention have been surprising in the industry to industry experts who expressed doubt as to the success of Applicant's invention.

Further, Applicant testifies as to the success that the invention has had in various mining operations throughout the world.

The Examiner is respectfully urged to consider the secondary considerations of nonobviousness and the consideration of applying *Takaki* as a reference to reject the claims.

Claims 5, 8 and 9 all depend from claim 1 and therefore are believed to be patentable for the same reasons.

With respect to the rejection of claims 10 and 11 under 35 U.S.C. § 103(a), these claims have been cancelled.

With respect to the rejection of claims 12 and 13 under 35 U.S.C. § 103(a), these claims have been cancelled.

With respect to the rejection of claims 14-18 and 21-24 under 35 U.S.C. § 103(a), Applicant respectfully offers the following.

Claim 14 had been amended to add the limitations of providing a wire rope of a diameter between 4 and 7 inches and providing a socket weighing between 1,500 and 2,800 lbs. For the same reasons offered with respect to claim 1, claim 14 is believed to be patentable.

With respect to claims 15, 17 and 19-24 these claims have been cancelled.

Claims 16 and 18 both depend from claim 14 and therefore are believed to be patentable for the same reasons as stated above.

INTERVIEW SUMMARY

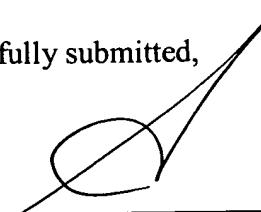
On January 10, 2007, the Examiner allowed a telephone interview. During the interview, the *Takaki* reference was discussed with respect to its disclosures of a composite rope in col. 1, lns. 10-20 and the process shown at col. 6, ln. 35. The size of the composite rope was also discussed. With respect to the *Mason* reference, the connectors shown at Figures 2 and 3 were discussed. Some amendments to the claims were discussed, but no agreement was reached.

CONCLUSION

For the reasons advanced above, it is respectfully submitted that the claims, specification and drawings are in full compliance with the requirements of 35 U.S.C. § 112 and that the claims are patentable over the prior art.

Allowance of the claims is earnestly solicited.

Respectfully submitted,


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